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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/542,766	07/20/2005	Eiichi Kato	019519-482	1607

21839 7590 04/08/2008

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POST OFFICE BOX 1404
ALEXANDRIA, VA 22313-1404

EXAMINER	
NELSON, MICHAEL B	
ART UNIT	PAPER NUMBER
4145	

NOTIFICATION DATE	DELIVERY MODE
04/08/2008	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ADIPFDD@bipc.com

Office Action Summary	Application No.	Applicant(s)	
	10/542,766	KATO, EIICHI	
	Examiner	Art Unit	
	MICHAEL B. NELSON	4145	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 February 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-7,10-13 and 27-45* is/are pending in the application.

4a) Of the above claim(s) *1-6,10-13 and 27* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *7, 28 and 30-45* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *07/20/05*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election of Group Ib, claims 7-9 and 28, drawn to an antireflective film in the reply filed on 02/07/08 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

2. Claims 1-6 and 27 (Group Ia) and 10-12 (Group Ic) and 13 and 29 (Group Id) are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected **inventions** (i.e. high refractive index layer, polarizing plate and image display device, respectively), there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 02/07/08.

The examiner would like to emphasize that Groups Ia, Ic and Id were restricted **not as species** of the overall Group I, drawn to products containing a high refractive index, but rather were restricted **as inventions** lacking the same or corresponding special technical feature. As such, only the claims drawn to the elected invention of an antireflective film, (i.e. claims 7, 28 and 30-45 in accordance with applicant's most recent claim amendment), will be considered. The remaining non-elected inventions will therefore **not** be added to consideration should the elected invention be found allowable.

Specification

3. The use of the trademarks has been noted in this application. They should be capitalized wherever they appear and be accompanied by the generic terminology.

Although the use of trademarks is permissible in patent applications, the proprietary nature of the marks should be respected and every effort made to prevent their use in any manner which might adversely affect their validity as trademarks.

Claim Objections

4. Claim 7 is objected to because of the following informalities: the phrase "at least one metal element" appears to be a typo of "at least one metal element." Appropriate correction is required.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. Claims 7, 28 and 30-45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsufuji et al. (U.S. 2002/0018886), in view of Sato et al. (U.S. 2002/0147108).

Regarding claim 7, Matsufuji et al. discloses an antireflection film comprising:

- a transparent support;
- a high refractive index layer comprising a matrix and fine particles of a high refractive index oxide,
- and a low refractive index layer having a refractive index of less than 1.55, in this order.

(See [0036] and Fig. 1(c). The antireflection film has a transparent support, 1, a high refractive index layer, 5, and a low refractive index layer, 3, in that order. Also see [0183], the high refractive index layer comprises a matrix and fine particles of a high refractive index oxide, (inter alia titanium oxide). See [0192], the low refractive index layer is disclosed as having an index of refraction of between 1.20 and 1.55, which substantially overlaps the claimed range with both endpoints lying within the range.)

Matsufuji et al. does not disclose that the fine particles of a high refractive index oxide be fine particles of a high refractive index composite oxide, containing:

- a titanium element;
- and at least one metal element, in which the oxide of the at least one metal element has a refractive index of 1.95 or more,
- and the composite oxide is doped with at least one metal ion selected from the group consisting of Co ion, Zr ion and AI ion;

Sato et al. discloses a high refractive index composite oxide, wherein the fine particles of a high refractive index composite oxide are fine particles of a composite oxide containing:

(See [0023] - [0037], the general invention is for different methods of forming fine particles of composite oxides. One of which is carried out by forming an aqueous solution of one metal fluoro complex and introducing seed crystals of another metal oxide to form a composite fine particle of the two metal oxides ([0058]). Another method is for doping of the metal fluoro complex in solution with metal ions ([0062]). It is also disclosed that these methods could be combined [0066].)

- a titanium element;

(See [0043]-[0045]. Titanium is disclosed as one of the metals M, used in the aqueous metal fluoro compound.)

- and at least one metal element, in which the oxide of the at least one metal element has a refractive index of 1.95 or more,

(See Example 1, [0121]-[0124], Iron oxide and Titanium oxide are combined into composite particles. Iron oxide has a refractive index higher than 1.95. Numerous other metals oxides are listed as combinable in the composite particles ([0060]).)

- and the composite oxide is doped with at least one metal ion selected from the group consisting of Co ion, Zr ion and AI ion;

(See [0062] and [0081], cobalt, zirconium and aluminum are listed as metals for use as doping ions, with zirconium and aluminum specifically listed as being combinable with titanium oxide. Also see [0066], the processes for producing composite metal oxides are disclosed as being combinable and in example 23 ([0156]-[0158]) titanium

oxide is doped with an ion, for which cobalt, zirconium and aluminum are listed as substitutes, and also combined with another metal oxide, for which iron oxide is listed as a substitute, to form composite metal oxide particles that are doped with metal ions.)

Furthermore, Sato et al. discloses that his invention, when used in coating layers exhibit transparency, low peeling properties and weather resistance ([0017]).

The inventions of both Matsufuji et al. and Sato et al. are drawn to the field of metal oxides for use in coatings and therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to have modified the antireflective film having metal oxide particles of Matsufuji et al. by using the composite metal oxide particles as taught by Sato et al. for the purposes of imparting low peeling properties and weather resistance.

Regarding claim 37, Matsufuji et al. discloses an antireflection film comprising:

- a transparent support;
- a high refractive index layer comprising a matrix and fine particles of a high refractive index oxide,
- and a low refractive index layer having a refractive index of less than 1.55, in this order.

(See [0036] and Fig. 1(c). The antireflection film has a transparent support, 1, a high refractive index layer, 5, and a low refractive index layer, 3, in that order. Also see [0183], the high refractive index layer comprises a matrix and fine particles of a high refractive index oxide, (inter alia titanium oxide). Also see [0192], the low refractive

index layer is disclosed as having an index of refraction of between 1.20 and 1.55, which substantially overlaps the claimed range with both endpoint lying with the range.)

Matsufuji et al. does not disclose that the fine particles of a high refractive index oxide be fine particles of a high refractive index composite oxide containing:

- a titanium element;
- and at least one metal element, in which the oxide of the at least one metal element has a refractive index of 1.95 or more,
- and the composite oxide is doped with at least one metal ion selected from the group consisting of Co ion, and Zr ion;

Sato et al. discloses a high refractive index composite oxide, wherein the fine particles of a high refractive index composite oxide are fine particles of a composite oxide containing:

(See [0023] - [0037], the general invention is for different methods of forming fine particles of composite oxides. One of which is carried out by forming an aqueous solution of one metal fluoro complex and introducing seed crystals of another metal oxide to form a composite fine particle of the two metal oxides ([0058]). Another method is for doping of the metal fluoro complex in solution with metal ions ([0062]). It is also disclosed that these methods could be combined [0066].)

- a titanium element;

(See [0043]-[0045]. Titanium is disclosed as one of the metals M, used in the aqueous metal fluoro compound.)

- and at least one metal element, in which the oxide of the at least one metal element has a refractive index of 1.95 or more,

  (See Example 1, [0121]-[0124], Iron oxide and Titanium oxide are combined into a composite particles. Iron oxide has a refractive index higher than 1.95. Numerous other metals oxides are listed as combinable in the composite particles ([0060]).)

- and the composite oxide is doped with at least one metal ion selected from the group consisting of Co ion, and Zr ion;

  (See [0062] and [0081], cobalt, zirconium and aluminum are listed as mtals for use as doping ions, with zirconium and aluminum specifically listed as being combinable with titanium oxide. Also see [0066], the processes for producing composite metal oxides are disclosed as being combinable and in example 23 ([0156]-[0158]) titanium oxide is doped with an ion, for which cobalt, zirconium and aluminum are listed as substitutes, and also combined with another metal oxide, for which iron oxide is listed as a substitute, to form composite metal oxide particles doped with metal ions.)

  Furthermore, Sato et al. discloses that his composite metal oxide particles would be advantageous in, among other things, optical coatings as antifogging agents ([0005]).

The inventions of both Matsufuji et al. and Sato et al. are drawn to the field of metal oxides for use in coatings and therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to have modified the antireflective film having metal oxide particles of Matsufuji et al. by using the composite metal oxide particles as taught by Sato et al. for the purposes of imparting antifogging properties.

Regarding claims 28 and 39, modified Matsufuji et al. discloses all of the claimed limitations as set forth above. Additionally, Matsufuji et al. discloses an antireflection film which further comprises a hard coat layer between the transparent support and the high refractive index layer.

(See [0036] and Fig. 1(c). The antireflection film has a transparent support, 1, a hard coat layer, 2, a high refractive index layer, 5, and a low refractive index layer, 3, in that order.)

Regarding claims 30 and 38, modified Matsufuji et al. discloses all of the claimed limitations as set forth above. Additionally, Matsufuji et al. discloses an antireflective film wherein an average particle size of the fine particles of a high refractive index composite oxide is 100 nm or less.

(See [0181], the particles are disclosed as being between preferably between 10 and 100 nm in size, which falls with the claimed range with both endpoints lying within the range.)

Regarding claims 31 and 40, modified Matsufuji et al. discloses all of the claimed limitations as set forth above. Additionally, Matsufuji et al. discloses an antireflective film wherein the high refractive index layer includes two layers different from each other in refractive index.

(See [0173] and Fig. 1(d). In one embodiment the high refractive index layer comprises two relatively high refractive index layers (i.e. the high refractive index layer and the medium refractive index layer). The two layers have different indexes of refraction ([0039]).

Regarding claims 32 and 41, modified Matsufuji et al. discloses all of the claimed limitations as set forth above. Additionally, Matsufuji et al. discloses an antireflective film wherein the fine particles of a high refractive index composite oxide are surface-treated with at least one compound of an inorganic compound and an organic compound.

(See [0184], inorganic and organic surface treatment compounds are disclosed for use with the fine particle metal oxides in the high refractive index layer.)

Regarding claims 33 and 42, modified Matsufuji et al. discloses all of the claimed limitations as set forth above. Additionally, Matsufuji et al. discloses an antireflective film wherein the matrix contains a cured product of at least one member selected from the group consisting of an organic binder, an organometallic compound and a partial hydrolyzate thereof.

(See [0190]. The binders used as the matrix for the metal oxide particles in the high refractive index layer are polymers which are organic binders.)

Regarding claims 34 and 43, Matsufuji et al. discloses all of the claimed limitations as set forth above. Additionally, Matsufuji et al. discloses an antireflective film wherein the high refractive index layer has a refractive index of 1.75 to 2.4.

(See [0174], the high refractive index layer is disclosed as having a refractive index of between 1.65 and 2.40 which completely overlaps the claimed range, with the upper endpoint, 2.40, lying within the claimed range.)

Regarding claims 35 and 44, Matsufuji et al. discloses all of the claimed limitations as set forth above. Additionally, Matsufuji et al. discloses an antireflective film wherein the high refractive index layer is formed from a composition obtained by dispersing particles of the high refractive index composite oxide using a dispersing agent, in which the dispersing agent is a compound having at least one anionic group selected from the group consisting of a carboxyl group, a sulfo group, a phosphono group and an oxyphosphono group.

(See [0103], Phosphonic acid group and sulfonic acid group are disclosed as products used to improve the compatibility of the inorganic fine particles in the hard coat layer with the binder resin (i.e. thereby easing dispersion ([0104])) and improving the film's resistance to cracks. Also see, [0188], various other dispersing agents are used in the high refractive index layer to disperse the metal oxide particles, of which the instant claimed dispersing agents are functional equivalents. It would have been obvious to one having ordinary skill in the arts at the time of the invention to have used the dispersing agents used for the particles in the hard coat layer as dispersing agents for the particles in the high refractive index layer since they were functional equivalents and in order to impart improved crack resistance.)

Regarding claims 36 and 45, Matsufuji et al. discloses all of the claimed limitations as set forth above. Additionally, Matsufuji et al. discloses an antireflective film wherein the dispersing agent is a compound containing a cross-linkable or polymerizable functional group.

(See [0103]-[0105], additional measures to improve the compatibility of the inorganic fine particles in the hard coat layer with the binder resin (i.e. thereby easing dispersion ([0104])) and improving the film's resistance to cracks are disclosed as cross linking agents, (i.e. polymerizable vinyl group), to bind the surface treated particles and the binder resin at the same time that the binder layer and the surface treatment agent are crosslinked. Also see, [0188], dispersing agents are used in the high refractive index layer to disperse the metal oxide particles. It would have been obvious to one having ordinary skill in the arts at the time of the invention to have used the polymerizable functional groups used to aid in the dispersion of the particles in the hard coat layer for the particles in the high refractive index layer since they both assist in proper dispersion and in order to impart improved crack resistance.)

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to MICHAEL B. NELSON whose telephone number is (571)270-3877. The examiner can normally be reached on Monday through Thursday 6AM-4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Basia Ridley can be reached on (571) 272-1453. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Gwendolyn Blackwell/
Primary Examiner, Art Unit 1794

/MN/
03/14/08